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FINAL TECHNICAL REPORT FOR NAG 5-4425

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Submitted to: Dr. Jean Swank, Code 662.0
NASA/Goddard Space Flight Center
Greenbelt, MD 20771

Submitted by: The Trustees of Columbia University
in the City of New York
351 Eng. Terrace
New York, New York 10027

Prepared by: Columbia Astrophysics Laboratory
Departments of Astronomy and Physics
Columbia University
550 West 120th Street, MC-5247
New York, New York 10027

Principal Investigator: Philip Kaaret

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Final Technical Report for
the NASA Rossi X-Ray Timing Grant NAG5-4425
“Monitoring X-ray Emission from X-ray Bursters”
Philip Kaaret, Columbia University

The goal of this investigation was to use the All-Sky Monitor on the Rossi X-Ray Timing Explorer (RXTE) in combination with the Burst and Transient Source Experiment on the Compton Gamma-Ray Observatory to simultaneously measure the x-ray (2-12 keV) and hard x-ray (20-100 keV) emission from x-ray bursters. The investigation was successful. We made the first simultaneous measurement of hard and soft x-ray emission and found a strong anticorrelation of hard and soft x-ray emission from the X-Ray Burster 4U 0614+091.

The monitoring performed under this investigation was also important in triggering target of opportunity observations of x-ray bursters made under the investigation hard x-ray emission of x-ray bursters approved for RXTE cycles 1 and 2. These observations lead to a number of papers on high-frequency quasi-periodic oscillations and on hard x-ray emission from the x-ray bursters 4U 0614+091 and 4U 1705-44.

This investigation provided partial salary and travel support for Eric Ford, Philip Kaaret, Marco Tavani, and John Tomsick. Eric Ford, now Dr. Ford, received his Ph.D. from Columbia University in September 1997, based mainly on results obtained under this investigation. Dr. Ford is now a Postdoctoral Research Scientist at the University of

Amsterdam. John Tomsick is current a graduate student at Columbia and should receive his Ph.D., based partially on the results of this investigation, in the summer of 1999. The investigation has lead to several publications in the *Astrophysical Journal*.

Publications supported under NAG5-4425

“Anticorrelated Hard/Soft X-Ray Emission from the X-Ray Burster 4U 0614+091”, E. Ford, P. Kaaret, B.A. Harmon, M. Tavani, S.N. Zhang, D. Barret, J. Grindlay, P. Bloser, and. R.A. Remillard, *Astrophys. J. Letters* 469, L37-L40 (1996).

“Evidence from Quasi-Periodic Oscillations for a Millisecond Pulsar in the Low-Mass X-Ray Binary 4U 0614+091”, E. Ford, P. Kaaret, M. Tavani, D. Barret, P. Bloser, J. Grindlay, B.A. Harmon, W.S. Paciesas, and S.N. Zhang, *Astrophys. J. Letters* 475, L123-L126 (1997).

“Discovery of Fast QPOs in the Atoll X-Ray Binary 4U 1705-44”, E.C. Ford, M. van der Klis, and P. Kaaret, *Astrophys. J. Letters* 498, L41 (1997).

“Hard X-Ray Emission from the Neutron Star X-Ray Binary 4U 1705-44”, P. Kaaret et al., in preparation for the *Astrophys. J.* (1998).